

ENGINE ELECTRICAL SYSTEM

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FEATURES

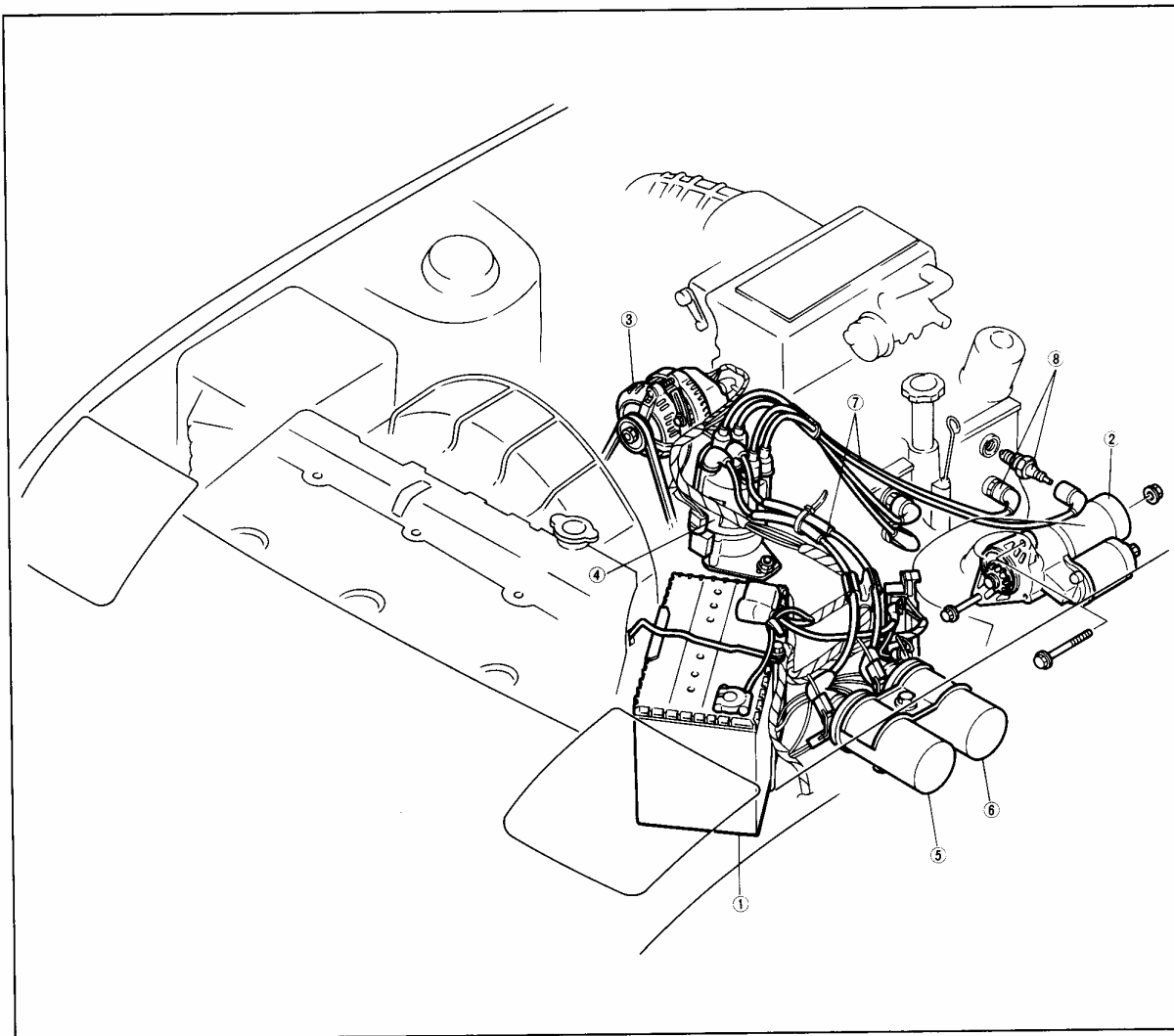
1. A compact alternator with built-in cooling fan has been adopted.
2. The spark-advance has been changed.

SPECIFICATIONS

		12A engine	13B engine	
Battery type and capacity		50D20L: 50AH; 65D23L: 55AH		
Alternator	Voltage – Capacity	12V – 55A	12V – 60A	
	Regulated voltage	14.2 ~ 15.2V	←	
	Output test (at hot)	Voltage	13.5V	←
		Current	More than 51A	More than 53A
		Speed	2,500 rpm	←
	Brush length	Standard	16.5 mm (0.65 in)	←
Wear limit		8 mm (0.31 in)	←	
Ignition	Spark timing	T: 20° ATDC L: 0° TDC	T: 20° ATDC L: 5° ATDC	
	Breaker type	Contactless (igniter)		
	Spark-advance control	Centrifugal spark-advance rpm: distributor rpm	T & L: 0°/500 rpm 12.5°/2,063 rpm	T & L: 0°/500 rpm 4.5°/750 rpm 13.75°/2,000 rpm
		Vacuum spark-advance	T: 0°/100 mmHg 15°/400 mmHg L: 1°/100 mmHg 4.5°/190 mmHg	T: 0°/100 mmHg 12.5°/350 mmHg L: 0°/100 mmHg 5°/250 mmHg
	Spark plugs	Type	BR7EQ14, BR8EQ14, BR9EQ14 . . . NGK W22EDR14, W25EDR14, W27EDR14 . . . N-D	
		Gap	1.4 ± 0.05 mm (0.055 ± 0.002 in)	

Starter motor	Output	1.2 kW	2.0 kW	
	Applicable	M/T vehicles	A/T vehicles	
	Free-running test	Voltage	11.5V	←
		Current	Less than 60A	Less than 100A
		Speed	6,500 rpm	3,500 rpm

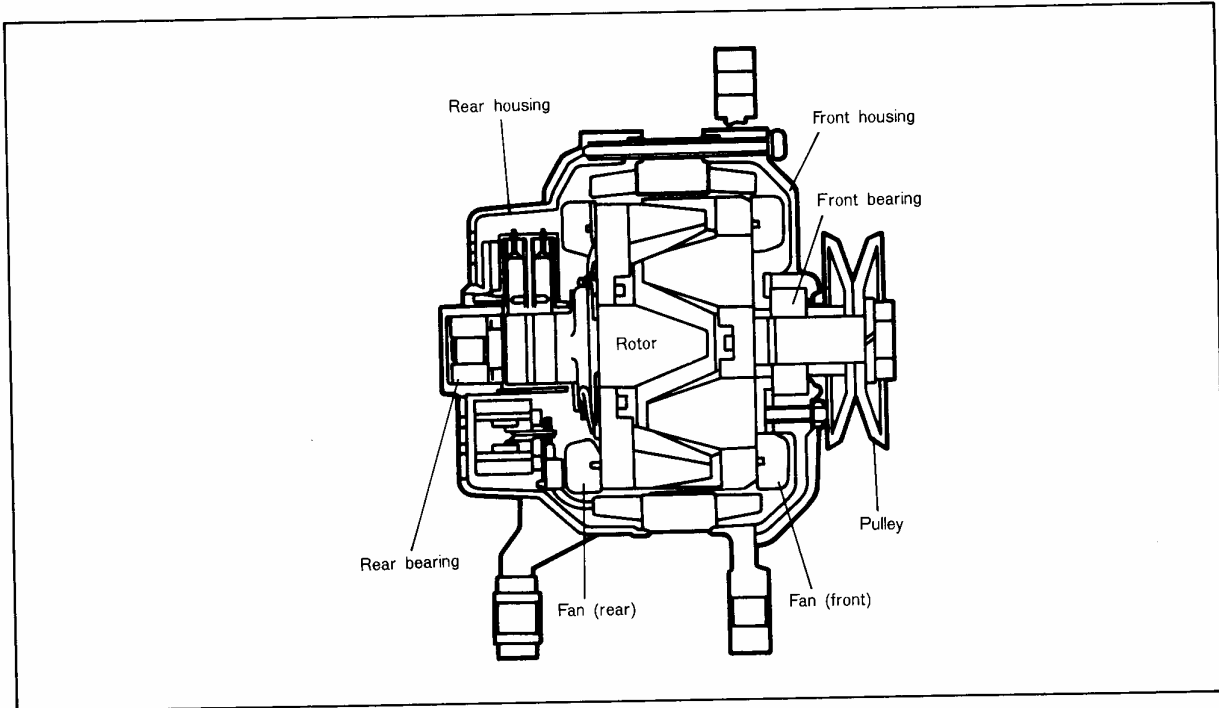
STRUCTURAL VIEW



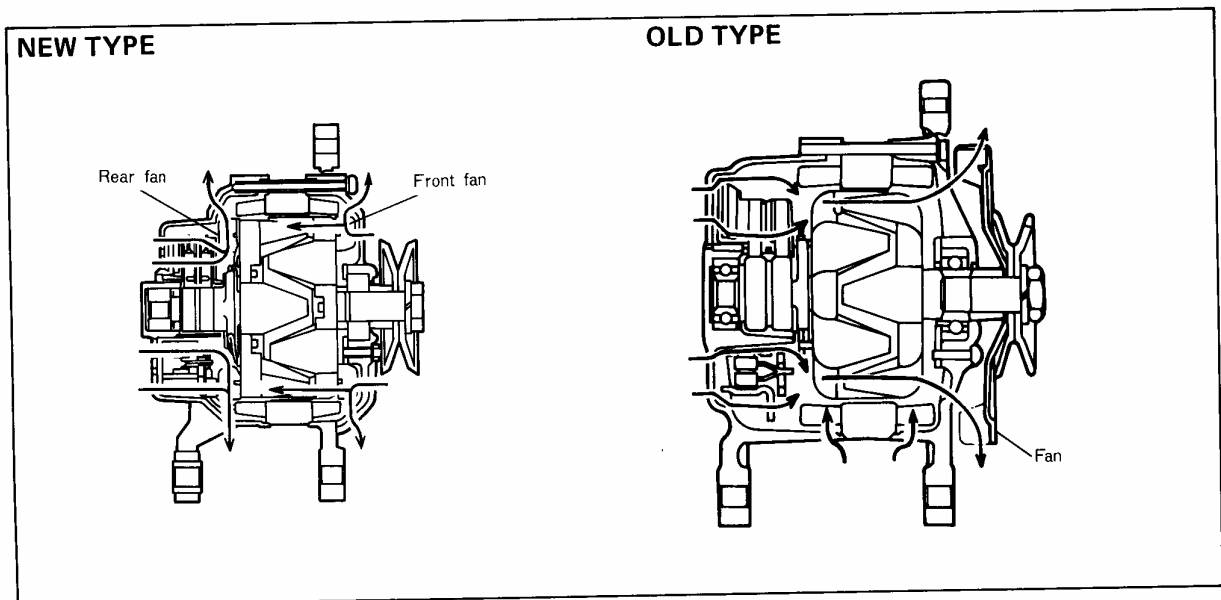
- 1 Battery
- 2 Starter motor
- 3 Alternator
- 4 Distributor

- 5 Ignition coil (T)
- 6 Ignition coil (L)
- 7 Hightension cord
- 8 Spark plugs

As noted elsewhere, the use of this alternator both improves cooling efficiency and is compact, with a weight which is reduced about 11% and a size which is reduced about 16% compared to the type formerly used.



The flow of coolant air is shown below.



COMPACT ALTERNATOR

In order to increase cooling efficiency, the construction has been fundamentally changed from the former type.

The fundamental construction of the compact alternator has been changed as follows. The external diameter of the stator coil has been reduced by 7 mm, and the cooling system has been changed from one outer fan to two inner fans.

The other main points of changed parts are as described below.

- Rear fan (new)

A cooling fan has been installed at the rear of the rotor. This fan is newly provided in order to reduce temperature increases of the coil, by "stirring" the air around the stator coil and thereby cooling the coil evenly.

- Front fan

The front fan is built in, and is located at the front of the rotor. This fan makes possible a reduction of the external diameter, increases the maximum rotation speed, reduces air flow noise, etc.

- Slip rings

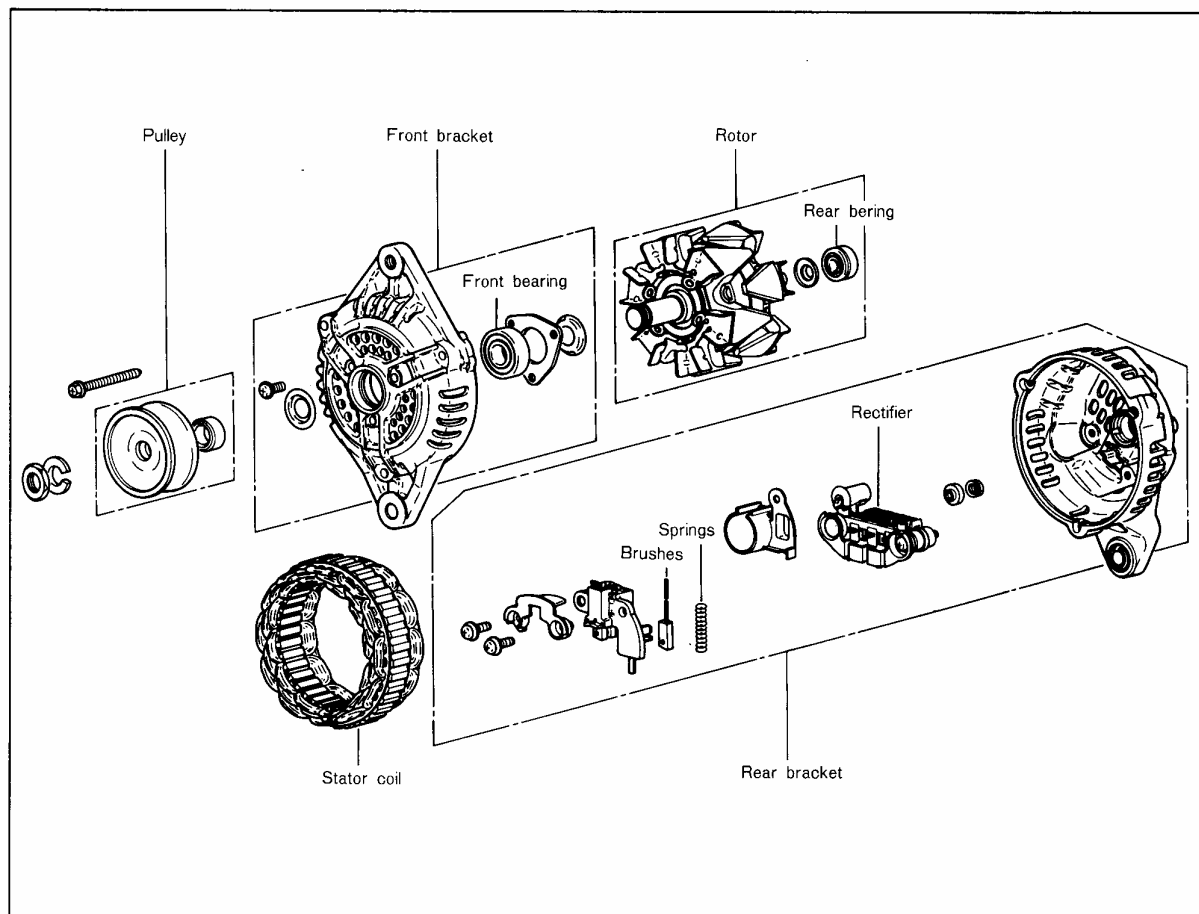
The external diameter has been changed from 33 to 22. The objective is to reduce the slip ring revolution speed, and thus increase the maximum rotation speed.

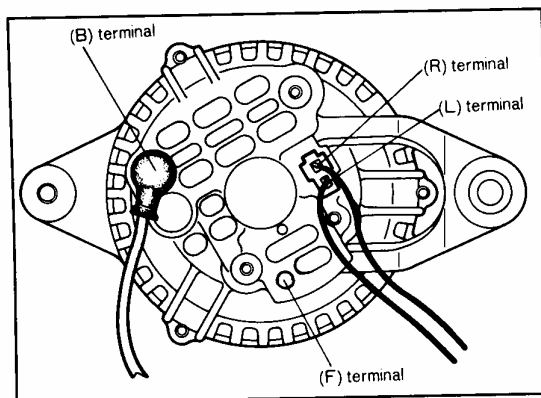
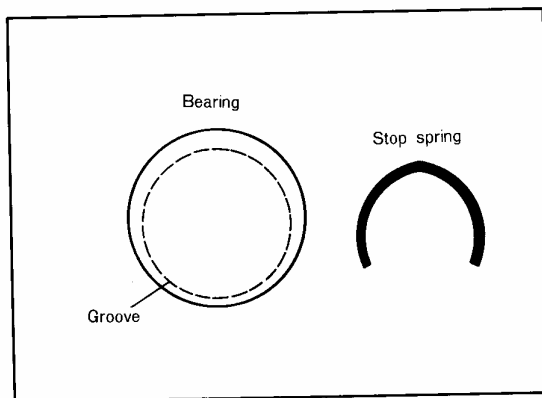
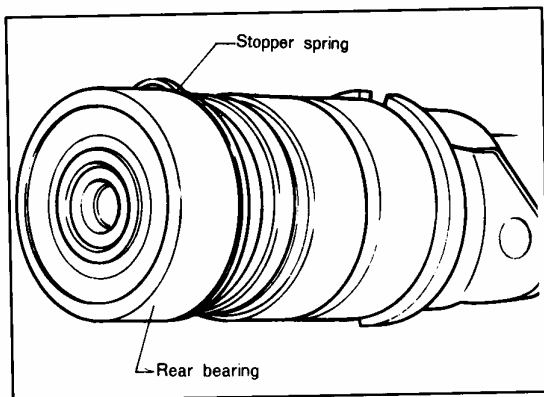
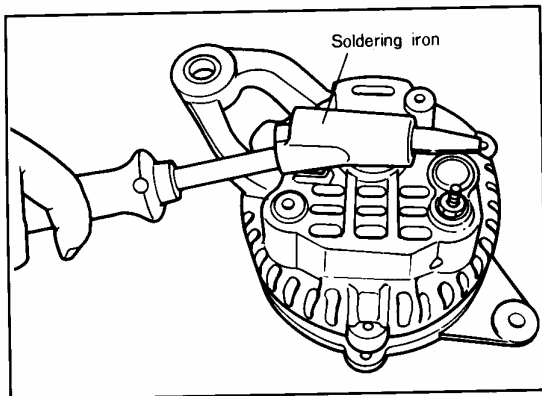
In addition, the material has been changed from stainless steel to copper in order to improve quality.

- Brushes

In conjunction with the reduction of the size of the alternator, the brush length has been shortened. In addition, the material has been changed.

STRUCTURAL VIEW



**Disassembly/assembly notes**

1. When the front bracket and the rear bracket are to be disassembled, it will be necessary, because the rear bracket and the rear bearing are tightly fit together, to heat the bearing box part of the rear housing for 3 or 4 minutes by using a soldering iron (200 W class). (Heat to about 50 to 60°C to expand the bearing box.)

2. During assembly, particular care should be given to the position of the stop spring used at the rear bearing circumference. There is an eccentric groove in the circumference of the rear bearing, and the stop spring is to fit into it. When attaching this stop spring, care should be taken to be sure that the part of the stop spring which projects the farthest should be placed at the deepest part of the groove.

In order to easily recognize this deepest part of the groove, the edge of the groove has been beveled. The reason for this is not only to make the assembly of the rear bearing and rear housing easier, but also to stop the bearing (outer) after the assembly is completed.

Caution

If this is not done, the rear housing may be damaged.

3. Terminal layout

The terminal layout is as shown in the figure.